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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

USA PCT National Stage Patent Application
PCT/EP01/03891 filed April 5, 2001

Albert Louis Victor Jozef Claessens

Serial No.: 09/980,227

First Submission filed: November 27, 2001

MOULDING SUITABLE FOR PHARMACEUTICAL APPLICATIONS
AND METHOD FOR PRODUCTION THEREOF

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

S I R :

PRELIMINARY AMENDMENT

Please amend the translation of this application simultaneously
with filing the accompanying translation for this National Stage
application as follows:

IN THE ABSTRACT

Cancel the Abstract and replace it with the new Abstract attached
herewith on a separate page.

IN THE SPECIFICATION

Page 1, Line 4, before this line insert the following paragraph
heading:

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--FIELD AND BACKGROUND OF THE INVENTION--

Page 1, Line 38, before this line insert the following paragraph heading:

--SUMMARY OF THE INVENTION--

Page 2, please replace the paragraph beginning at line 6 with the following rewritten paragraph:

With regard to the moulding, the object is achieved substantially wherein the moulding consists, at least in a subregion, of a thermoplastic elastomer material with a mineral filler content of 30% or more and this subregion has a hot-runner injection point which is formed as a smooth-surfaced mark. The object is also achieved wherein it is also of significance that, in the case of a second part of the moulding, the latter consists of a different plastics, for example a conventional injection-moulding plastics, such as PP, PE or the like, which is then used to inject over the injection point of the first subregion. In such a case, the injection point of the subregion formed from the flexible elastomer material in particular can then also be formed as a hot-runner injection point, which is then, again preferably, also formed as a smooth-surfaced mark. According to the invention, it has been recognized that a thermoplastic elastomer material with a mineral filler content of 30% or more is suitable for meeting the material requirements of pharmaceutical mouldings of this

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type. This is so at least when, in the case of outward exposure on the moulding, the injection point is formed by a hot-runner injection point and a smooth-surfaced mark is created. Disturbing streaking or instances of material unevenness, in particular in the region of the injection point, can no longer be found. Nevertheless, such a moulding can be efficiently produced by customary injection-moulding processes, but with hot-runner injection. It is preferable in this context that the mark which is created on the moulding by the hot-runner injection point goes over into the moulding wall surrounding it without being offset outwards. In particular, it is preferred for the smooth-surfaced mark to go over into the moulding wall surrounding it in a coplanar manner. Furthermore, however, it may also be recommendable in special cases for the mark to be raised with respect to the moulding wall surrounding it, that is to say it is offset outwards. This is so for example if, as is the aim also explained above, the two-component injection-moulding process is being used or the moulding consisting of the elastomer material is part of a multi-part article, in which the injection point is covered by a further part or is even encapsulated therein. This is so because a raised mark may also be recommendable for positive engagement in a further part.

Page 6, please replace the paragraph beginning at line 27 with the following rewritten paragraph:

A further article which may be embodied by such a moulding serving for pharmaceutical uses is a sealing element, as used in

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the case of so-called "bottle-pack" bottles. In this respect, reference is made in particular to the disclosure of German Patent Applications 195 00 460 and 196 20 196, the contents of which are hereby also incorporated in full, also for the purpose of including features of these prior publications in claims of the present patent application. Such a sealing element customarily has a peripheral flange of a smaller wall thickness or, on the upper side and/or underside, a peripheral groove associated with the edge and a central region of greater wall thickness. Here, too, the injection preferably takes place centrally in the upper outer surface. Moreover, the geometrical features described also apply here, for instance with regard to the thickness of the walls, and the features regarding the purity and freedom from streaks, as already explained before with respect to the moulding in general and the other uses. In particular, such an article may also be produced in the multi-component injection-moulding process, the one subregion, for instance the subregion of rigid plastics forming the outer cap, then forming the mould (again at least partially) for the subsequently injected elastomer-material subregion. It is also possible, however, to adopt the reverse procedure. In particular in the latter case, it is possible, and may even be appropriate, to produce the hot-runner injection point in such a way that it is raised with respect to the surrounding moulding wall of elastomer material, but in the end depressed with respect to the moulding wall of a second subregion of another plastics component, in particular a rigid plastics component.

Page 8, please replace the paragraph beginning at line 28 with the following rewritten paragraphs:

When forming a protective cap for medical syringes in the plastic injection-moulding process specified above, a solid cap hat and a comparatively thin-walled cap neck are moulded. In an advantageous way, the hot-runner injection takes place centrally on the cap hat. Otherwise, from a production engineering viewpoint, the same features as also already described above with respect to the production of the stopper or the seal are preferred.

BRIEF DESCRIPTION OF THE DRAWINGS

Page 10, Line 22, before this line insert the following paragraph heading:

--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT--

Page 11, please replace the paragraph beginning at line 8 with the following rewritten paragraph:

The stopper 1 takes the form of a hollow stopper. The latter fits in a sealing manner in a substantially cylindrical mouth 10 of the neck 4. The cavity of the hollow stopper 1, opening towards the space inside the bottle, has the reference numeral 11.

Page 14, please replace the paragraph beginning at line 14 with the following rewritten paragraph:

The injection point A (cf. for instance Figures 6 and 13) of the hot-runner injection is denoted on the moulding (cf. for example Figures 2, 4, 7, 8, 14) by 24. It may lie centrally on the protective cap 2 and preferably lies centrally on the stopper 1, as also in the case of the seals 44. This achieves the effect of a uniform distribution at high flow rate. Aesthetic defects do not occur. There are not even any visual irregularities such as colour deviations. Furthermore, customary injection moulds can be used. In this case, the cavity filling is largely temperature-independent. It can be between 200 and 280°C, without any major differences in quality being evident.

Page 16, please replace the paragraph beginning at line 5 with the following rewritten paragraph:

With respect to the mouldings described, the list of requirements in terms of the material also take into account that such mouldings should be autoclave-resistant. They withstand temperatures of 120°C over a relatively long period of time. In spite of the admixture explained, the material remains outstandingly suitable for injection moulding. The required compromise has been found. Moreover, plasticizer is also added to the thermoplastic elastomer material.

Page 17, please replace the paragraph beginning at line 26, with the following rewritten paragraph:

In the case of the embodiment of Figure 14, the article according to Figure 11 is produced in the two-component injection-moulding process, the injection point 24 being formed such that it is offset outwards with respect to the surrounding moulding wall, in a way corresponding to a mould-related design according to Figure 13. Following the moulding of elastomer material formed here as a seal 44, the surrounding cap 43 has been moulded, including a cap part formed here as projecting portion 51 and extending over the injection point 24. The feature that, when produced in the two-component injection-moulding process, the injection point 24 of the subregion of the (overall) moulding, which consists of thermoplastic elastomer material, has the further subregion of the moulding of plastics of the second component extending over it is also significant, irrespective of how the injection point 24 is formed.

Page 18, delete the paragraph lines 6-12

IN THE CLAIMS

before claim 1, change "Claims" to --^I~~the~~ CLAIM--

Please cancel claims 1-31 without prejudice or disclaimer of the subject matter therein and substitute claims 32-62 therefor:

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--32. (new) 1. Moulding serving for pharmaceutical uses, such as a stopper (1) for pharmaceutical bottles, a protective cap (2) for medical syringes or a sealing element (38, 39) for pharmaceutical containers, the moulding (1, 2, 38, 39, 44) comprising at least in a subregion, a thermoplastic elastomer material with a mineral filler content of at least 30% and said subregion having a hot-runner injection point which is formed as a smooth-surfaced mark.

33. (new) Moulding serving for pharmaceutical uses, such as a stopper (1) for pharmaceutical bottles, a protective cap (2) for medical syringes or a sealing element (38, 39) for pharmaceutical containers, the moulding (1, 2, 38, 39, 44) comprising in a subregion, a thermoplastic elastomer material with a mineral filler content of at least 30% and said subregion having an injection point, which is injected over by a second part of the moulding, made of another plastics.

34. (new) Moulding according to claim 33, wherein the injection point of the subregion formed from the elastomer material which is flexible, is formed as a hot-runner injection point.

35. (new) Moulding according to claim 34, wherein the hot-runner injection point is formed as a smooth-surfaced mark.

36. (new) Moulding according to claim 32, wherein the moulding altogether is made of the elastomer material.

37. (new) Moulding according to claim 32, wherein the hot-runner injection point goes over into the surrounding moulding wall without being offset outwards.

38. (new) Moulding according to claim 32, wherein a hot-runner injection point offset outwards with respect to a surrounding moulding wall is encapsulated by a plastics part.

39. (new) Moulding according to claim 38, wherein the smooth-surfaced mark of the hot-runner injection point goes over into the moulding wall surrounding it in a coplanar manner.

40. (new) Moulding according to claim 32, wherein the moulding is of a predominantly thick-walled form.

41. (new) Moulding according to claim 32, wherein in the case of the stopper (1), a stopper top (13)

and a stopper collar (14) are formed and wherein there is a central hot-runner injection (A) in a region of the stopper top (13).

42. (new) Moulding according to claim 41, wherein in case of the stopper, the stopper top (13) has a central region (12) of smaller wall thickness (x) and an edge region (15) of greater wall thickness (y).

43. (new) Moulding according to claim 32, wherein having a form of a protective cap (2) for medical syringes and wherein Δ 18 the protective cap (2) has a hot-runner injection (A) in a region of a cap hat (18).

44. (new) Moulding according to claim 32, wherein the thermoplastic elastomer material contains a proportion of plasticizers.

45. (new) Moulding according to claim 32, being formed as a sealing element for a pharmaceutical bottle, a central hot-runner injection (A) being provided in an outer surface.

46. (new) Moulding according to claim 41, wherein in case of the stopper, a stopper collar (14) has a greater wall thickness (z) than a stopper top (13) in its central region.

47. (new) Protective cap (2) produced in a plastics injection-moulding process for medical syringes, with a solid cap hat (18) and a comparatively thin-walled cap neck (19), wherein the protective cap (2) is made of thermoplastic elastomer material with a mineral filler content of at least 30% or more and wherein there is a hot-runner injection (A) in a region of the cap hat (18).

48. (new) Protective cap according to claim 47, wherein the thermoplastic elastomer material contains a proportion of plasticizer.

49. (new) Protective cap according to claim 47, wherein a central hot-runner injection (A) is performed in a region of a tip of the cap hat.

50. (new) Method for producing a moulding for a pharmaceutical use, such as a stopper (1) for pharmaceutical bottles, a protective cap (2) for medical syringes or a sealing element (38, 39) for pharmaceutical containers,

wherein the moulding is produced, at least in a subregion, from a thermoplastic elastomer material with a mineral filler content of at least 30% and said subregion is configured by a hot-runner injection, a injection point being formed as a smooth-surfaced mark.

51. (new) Method for producing a moulding for a pharmaceutical use, such as a stopper (1) for pharmaceutical bottles, a protective cap (2) for medical syringes or a sealing element (38, 39) for pharmaceutical containers, wherein the moulding is produced, in a subregion, from a thermoplastic elastomer material with a mineral filler content of at least 30% and said subregion is configured by an injection having an injection point, which injection point is injected over with another plastics, forming a second subregion of the moulding.

52. (new) Method according to claim 51, wherein the injection of the thermoplastic elastomer material is carried out by a hot-runner injection.

53. (new) Method according to claim 52, wherein the injection point of the hot-runner injection is formed as a smooth-surfaced mark.

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54. (new) Method according to claim 50, wherein the moulding altogether is made of the elastomer material.

55. (new) Method according to claim 54, wherein the hot-run injection point is produced such that it goes over into a surrounding moulding wall without any offset outwards.

56. (new) Method according to claim 50, wherein the injection point is produced with an offset outwards with respect to a surrounding moulding wall.

57. (new) Method for producing a stopper (1) for pharmaceutical bottles (3), such as for example infusion bottles, in a plastics injection-moulding process, with a stopper top (13) and a stopper collar (14), wherein a thermoplastic elastomer material with at least a 30% admixed mineral filler content is used and wherein a central hot-runner injection (A) is performed in a region of a stopper top (13) of the stopper (1) of a predominantly thick-walled form.

58. (new) Method according to claim 57, wherein the stopper collar (14) is formed with a greater wall thickness (z) than the stopper top (13) in its central region.

59. (new) Method according to claim 57, wherein the stopper top (13) is formed with a central region of lesser wall thickness (x) and an edge region (15) of greater wall thickness (y).

60. (new) Method for producing a protective cap (2) for medical syringes in a plastics injection-moulding process, with a solid cap hat (18) and a comparatively thin-walled cap neck (19), wherein a thermoplastic elastomer material with at least a 30% admixed mineral filler content is used and in that a central hot-runner injection (A) is performed in the region of the cap hat (18).

61. (new) Method according to claim 60, wherein the hot-runner injection (A) is performed centrally on the cap hat (18).

62. (new) Method according to claim 60, wherein a proportion of plasticizer is added to the thermoplastic elastomer material.--

R E M A R K S

Claims 1-31 have been cancelled without prejudice or disclaimer of the subject matter therein and claims 32-62 respectively are presented to present said claims in accordance with USA practice under 35 USC 112, and to eliminate multiple-dependent form claims.

No multiple-dependent claim fees should apply in this application.


The specification has been amended for formal improvement to comply with USA practice.

An Abstract is presented on a separate page.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached pages are captioned "Version with markings to show changes made"

The Examiner is respectfully requested to enter this Preliminary Amendment prior to calculation of the filing fee as of the national stage filing date, and to provide an action on the merits.

Respectfully submitted
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MOULDING SUITABLE FOR PHARMACEUTICAL APPLICATIONS
AND METHOD FOR PRODUCTION THEREOF

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Page 2, please replace the paragraph beginning at line 6 with the following rewritten paragraph:

With regard to the moulding, the object is achieved [firstly and] substantially [by the respective subject matter of Claims 1 and 2, it firstly being of significance, Claim 1, in addition to the features already specified, that] wherein the moulding consists, at least in a subregion, of a thermoplastic elastomer material with a mineral filler content of 30% or more and this subregion has a hot-runner injection point which is formed as a smooth-surfaced mark. The object is also achieved wherein [In addition, Claim 2,] it is also of significance that, in the case of a second part of the moulding, the latter consists of a different plastics, for example a conventional injection-moulding plastics, such as PP, PE or the like, which is then used to inject over the injection point of the first subregion. In such a case, the injection point of the subregion formed from the flexible elastomer material in particular can then also be formed as a hot-runner injection point, which is then, again preferably, also formed as a smooth-surfaced mark. According to the invention, it has been recognized that a thermoplastic elastomer material with

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a mineral filler content of 30% or more is suitable for meeting the material requirements of pharmaceutical mouldings of this type. This is so at least when, in the case of outward exposure on the moulding, the injection point is formed by a hot-runner injection point and a smooth-surfaced mark is created. Disturbing streaking or instances of material unevenness, in particular in the region of the injection point, can no longer be found. Nevertheless, such a moulding can be efficiently produced by customary injection-moulding processes, but with hot-runner injection. It is preferable in this context that the mark which is created on the moulding by the hot-runner injection point goes over into the moulding wall surrounding it without being offset outwards. In particular, it is preferred for the smooth-surfaced mark to go over into the moulding wall surrounding it in a coplanar manner. Furthermore, however, it may also be recommendable in special cases for the mark to be raised with respect to the moulding wall surrounding it, that is to say it is offset outwards. This is so for example if, as is the aim also [of Claim 2] explained above, the two-component injection-moulding process is being used or the moulding consisting of the elastomer material is part of a multi-part article, in which the injection point is covered by a further part or is even encapsulated therein. This is so because a raised mark may also be recommendable for positive engagement in a further part.

Page 6, please replace the paragraph beginning at line 27 with the following rewritten paragraph:

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A further article which may be embodied by such a moulding serving for pharmaceutical uses is a sealing element, as used in the case of so-called "bottle-pack" bottles. In this respect, reference is made in particular to the disclosure of German Patent Applications 195 00 460 and 196 20 196, the contents of which are hereby also incorporated in full, also for the purpose of including features of these prior publications in claims of the present patent application. Such a sealing element customarily has a peripheral flange of a smaller wall thickness or, on the upper side and/or underside, a peripheral groove associated with the edge and a central region of greater wall thickness. Here, too, the injection preferably takes place centrally in the upper outer surface. Moreover, the geometrical features described also apply here, for instance with regard to the thickness of the walls, and the features regarding the purity and freedom from streaks, as already explained before with respect to the moulding in general and the other uses. In particular, such an article may also be produced in the multi-component injection-moulding process, the one subregion, for instance the subregion of rigid plastics forming the outer cap, then forming the mould (again at least partially) for the subsequently injected elastomer-material subregion. It is also possible, however, to adopt the reverse procedure. In particular in the latter case, it is possible, and may even be appropriate, to produce the hot-runner injection point in such a way that it is raised with respect to the surrounding moulding wall of elastomer material, but in the end depressed with respect to the moulding wall of a second subregion of another plastics component, in particular a rigid plastics component.

Page 8, please replace the paragraph beginning at line 28 with the following rewritten paragraphs:

When forming a protective cap for medical syringes in the plastic injection-moulding process specified above, a solid cap hat and a comparatively thin-walled cap neck [is] are moulded. In an advantageous way, the hot-runner injection takes place centrally on the cap hat. Otherwise, from a production engineering viewpoint, the same features as also already described above with respect to the production of the stopper or the seal are preferred.

BRIEF DESCRIPTION OF THE DRAWINGS

Page 11, please replace the paragraph beginning at line 8 with the following rewritten paragraph:

The stopper 1 takes the form of a hollow stopper. The latter fits in a sealing manner in a substantially cylindrical mouth 10 of the neck 4. The cavity of the hollow stopper [9]1, opening towards the space inside the bottle, has the reference numeral 11.

Page 14, please replace the paragraph beginning at line 14 with the following rewritten paragraph:

The injection point A (cf. for instance Figures 6 and 13) of the hot-runner injection is denoted on the moulding (cf. for example Figures 2, 4, 7, 8, 14) by 24. It may lie centrally on the protective cap 2 and preferably lies centrally on the stopper 1, as also in the case of the seals 44. This achieves the effect of a uniform distribution at high flow rate. Aesthetic defects do not occur. There are not even any visual irregularities such as colour deviations. Furthermore, customary injection moulds can be used. In this case, the cavity filling is largely temperature-independent. It can be between 200 and 280°C, without any major differences in quality being evident.

Page 16, please replace the paragraph beginning at line 5 with the following rewritten paragraph:

With respect to the mouldings described, the list of requirements in terms of the material also take into account that such mouldings should be autoclave-resistant. They withstand temperatures of 120°C over a relatively long period of time. In spite of the admixture explained, the material remains outstandingly suitable for injection moulding. The required compromise has been found. Moreover, plasticizer is also added to the thermoplastic elastomer material.

Page 17, please replace the paragraph beginning at line 26, with the following rewritten paragraph:

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MOULDING SUITABLE FOR PHARMACEUTICAL APPLICATIONS
AND METHOD FOR PRODUCTION THEREOF

ABSTRACT

A moulding serving for pharmaceutical uses, such as a stopper (1) for pharmaceutical bottles, a protective cap (2) for medical syringes or a sealing element (38, 39) for pharmaceutical containers. To achieve production with virtually no scrap and with high product quality, the moulding (1, 2, 38, 39, 44) consists, at least in a subregion, of a thermoplastic elastomer material with a mineral filler content of 30% or more and this subregion has a hot-runner injection point which is formed as a smooth-surfaced mark.

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